Listing of the Claims

1-74. (cancelled)

75. (previously presented) A low-temperature fabrication method for fabricating a conformal metal oxide coating on a substrate, the method comprising the steps of:

coating a surface of a substrate with a non-hydrolysed precursor solution of one or more moisture-sensitive metal alkoxides in an organic solvent at a temperature of less than 150°C; and

rinsing the precursor solution coated on the surface of the substrate in water at a temperature of less than 150°C to hydrolyse precursor solution at the surface of the substrate and thereby form a conformal metal oxide coating on the substrate.

76. (previously presented) The method of claim 75, wherein the one or more moisture-sensitive metal alkoxides comprise $M(OR)_z$, where M is any metal, and OR is an alkoxide group.

77. (previously presented) The method of claim 76, wherein the metal is a metal selected from the group consisting of Al, Ce, Mg, Nb, Si, Sn, Ti, V, Zn and Zr.

78. (previously presented) The method of claim 75, wherein the step of coating a surface of a substrate is performed at room temperature.

79. (previously presented) The method of claim 75, wherein the step of coating a surface of a substrate is performed by dipping the surface of the substrate in the precursor solution, preferably for a period of from about 1 minute to about 1 hour.

80. (previously presented) The method of claim 75, wherein the step of coating a surface of a substrate is performed by spraying the surface of the substrate with the precursor solution.

81. (previously presented) The method of claim 75, wherein the step of coating a surface of a substrate is performed by spin-coating the surface of the substrate with the precursor solution.

82. (previously presented) The method of claim 75, wherein the precursor solution has a concentration of less than about 200 mM, preferably a concentration in the range of from about 1 mM to about 100 mM, and more preferably a concentration in the range of from about 5 mM to about 20 mM.

83. (previously presented) The method of claim 75, wherein the step of rinsing the precursor solution coated on the surface of the substrate is performed at room temperature.

84. (previously presented) The method of claim 75, wherein the step of rinsing the precursor solution coated on the surface of the substrate is performed by dipping the coated surface of the substrate in water.

85. (previously presented) The method of claim 75, further comprising the step of:

drying the rinsed surface of the substrate at a temperature of less than 150°C, preferably at room temperature.

86. (previously presented) The method of claim 85, wherein the step of drying the rinsed surface of the substrate is performed by directing a gas flow thereover.

87. (previously presented) The method of claim 75, wherein the surface of the substrate is a flat surface.

88. (previously presented) The method of claim 75, wherein the surface of the substrate comprises a structured surface.

89. (previously presented) The method of claim 88, wherein the structured surface comprises a nanoporous surface.

90. (previously presented) The method of claim 88, wherein the structured surface comprises a reticulated surface.

91. (previously presented) The method of claim 75, wherein the substrate includes a temperature-sensitive element.

92. (previously presented) The method of claim 91, wherein the temperature-sensitive element is selected from the group consisting of a plastic and a polymer.

93. (previously presented) The method of claim 91, wherein the temperature-sensitive element comprises temperature-sensitive molecules, preferably molecules selected from the group consisting of inorganic, organic and organometallic molecules, polymeric molecules, biomolecules, or biological macromolecules, and more preferably biological macromolecules selected from the group consisting of proteins and nucleic acids.

94. (previously presented) The method of claim 93, wherein the molecules are at the surface of the substrate.

95. (previously presented) The method of claim 94, wherein the coating extends over regions of the surface of the substrate not encompassed by the molecules.

96. (previously presented) The method of claim 94, wherein the coating encapsulates the molecules.

97. (previously presented) The method of claim 75, wherein the substrate comprises particles, preferably dry particles or particles suspended in solution.

98. (previously presented) The method of claim 97, wherein the particles comprise nanoparticles.

99. (previously presented) The method of claim 75, wherein the metal oxide coating has a thickness of from about 0.2 nm to about 10 nm, preferably a thickness of from about 0.2 nm to about 1 nm.

100. (previously presented) A low-temperature fabrication method for fabricating a metal oxide coating on a substrate, the method comprising the steps of:

coating a surface of a substrate with a non-hydrolysed precursor solution of one or more moisture-sensitive metal alkoxides in an organic solvent at a temperature of less than 150°C; and

hydrolysing precursor solution at the surface of the substrate to form a metal oxide coating at a temperature of less than 150°C.

101. (previously presented) The method of claim 100, wherein the metal oxide coating is a conformal coating.

102. (previously presented) The method of claim 100, wherein the precursor solution has a concentration of less than about 200 mM, preferably a concentration in the range of from about 1 mM to about 100 mM, and more preferably a concentration in the range of from about 5 mM to about 20 mM.

103. (previously presented) The method of claim 100, wherein the step of hydrolysing the precursor solution coated on the surface of the substrate is performed in water.

104. (previously presented) The method of claim 100, wherein the step of hydrolysing the precursor solution coated on the surface of the substrate is performed at room temperature.

105. (previously presented) The method of claim 100, wherein the step of hydrolysing the precursor solution coated on the surface of the substrate is performed by rinsing the coated surface of the substrate.

106. (previously presented) The method of claim 100, further comprising the step of:

drying the hydrolysed surface of the substrate at a temperature of less than 150 °C, preferably at room temperature.

107. (previously presented) The method of claim 106, wherein the step of drying the hydrolysed surface of the substrate is performed by directing a gas flow thereover.

108. (previously presented) The method of claim 100, wherein the metal oxide coating has a thickness of from about 0.2 nm to about 10 nm, preferably a thickness of from about 0.2 nm to about 1 nm.

109. (previously presented) A device incorporating a substrate having a metal oxide coating as fabricated by the method of claim 75.

110. (previously presented) The device of claim 109, wherein the device is one of an electronic or optoelectronic device, preferably a photovoltaic device, and more preferably a dye sensitized solar cell.

111. (previously presented) A dye sensitized solar cell device, comprising a nanocomposite film sandwiched between a pair of electrodes, wherein the nanocomposite film comprises a mesoporous, nanocrystalline film conformally coated with a first coating of a metal oxide and a second coating of a sensitizing dye, and a redox-active electrolyte interpenetrated into the pores of the nanocrystalline film.

112. (previously presented) The device of claim 111, wherein the metal oxide coating has a thickness of from about 0.2 nm to about 10 nm, preferably a thickness of from about 0.2 nm to about 1 nm.

113. (previously presented) The device of claim 111, wherein the metal oxide comprises Al_2O_3.

114. (previously presented) The device of claim 111, wherein the nanocomposite film comprises TiO_2.

115. (previously presented) The device of claim 111, wherein the redox-active electrolyte comprises a polymer electrolyte.

116. (previously presented) A non-hydrolysed precursor solution of one or more moisture-sensitive metal alkoxides in an organic solvent.

117. (previously presented) The precursor solution of claim 116, wherein the one or more moisture-sensitive metal alkoxides comprise $M(OR)_z$, where M is any metal, and OR is an alkoxide group.

118. (previously presented) The precursor solution of claim 117, wherein the metal is a metal selected from the group consisting of Al, Ce, Mg, Nb, Si, Sn, Ti, V, Zn and Zr.

119. (previously presented) The precursor solution of claim 116, wherein the precursor solution has a concentration of less than about 200 mM, preferably a concentration in the range of from about 1 mM to about 100 mM, and more preferably a concentration in the range of from about 5 mM to about 20 mM.

120. (previously presented) A method of preparing a non-hydrolysed precursor solution of one or more moisture-sensitive metal alkoxides in an organic solvent, the method comprising the step of mixing one or more moisture-sensitive metal alkoxides in an organic solvent in a controlled environment containing less than about 10 ppm water.

121. (previously presented) The method of claim 120, where performed at room temperature.

122. (previously presented) The method of claim 120, wherein the controlled environment is an inert atmosphere.

123. (previously presented) The method of claim 120, wherein the one or more moisture-sensitive metal alkoxides comprise $M(OR)_z$, where M is any metal, and OR is an alkoxide group.

124. (previously presented) The method of claim 123, wherein the metal is a metal selected from the group consisting of Al, Ce, Mg, Nb, Si, Sn, Ti, V, Zn and Zr.

125. (previously presented) The method of claim 120, wherein the precursor solution has a concentration of less than about 200 mM, preferably a concentration in the range of from about 1 mM to about 100 mM, and more preferably a concentration in the range of from about 5 mM to about 20 mM.